

We Claim:

1. A data output method for rendering at a selected output device output content at least identifiable from an information apparatus, comprising:
  - obtaining at the information apparatus a document object related to the output content;
  - obtaining at the information apparatus an output device object with one or more attributes corresponding to the selected output device; transmitting from the information apparatus the document object and the output device object to a processor that is distinct from the information apparatus and the selected output device; and
  - generating with the processor output data acceptable for rendering at the selected output device.
2. The method of claim 1 further comprising delivering the output data from the processor to the selected output device through a network.
3. The method of claim 1 further comprising receiving the output data at the information apparatus and delivering the output data from the information apparatus to the selected output device.
4. The method of claim 1 in which the output data comprises one or more of a page description language, a markup language, a file format, an image format, a graphics format, an audio file, and a video file.
5. The method of claim 1 in which the generating of the output data comprises at least a partial raster image processing operation on the output content.
6. The method of claim 1 further comprising establishing a communication channel between the information apparatus and the output device and receiving one or more attributes characterizing the output device.
7. The method of claim 1 further comprising discovering the selected output device as one of one or more output devices that are discovered by the information apparatus as being available for rendering the output content.
8. The method of claim 7 further comprising selecting one of the one or more output devices that are discovered.
9. The method of claim 1 further comprising obtaining at the information

apparatus a job object with one or more attributes characterizing the rendering of the output content.

10. The method of claim 1 in which the document object includes the output content.

11. The method of claim 1 in which the document object includes a pointer or reference to the output content.

12. The method of claim 1 in which the output device object includes an identification attribute that includes one or more of an output device brand indication, a model indication, an output device identification, type of output device indication, and a network address indication.

13. In a computer readable medium, data output software for rendering at a selected output device output content at least identifiable from an information apparatus, comprising:

software for obtaining at the information apparatus a document object related to the output content;

software for obtaining at the information apparatus an output device object with one or more attributes corresponding to the selected output device;

software for transmitting from the information apparatus the document object and the output device object to a processor that is distinct from the information apparatus and the selected output device; and

software for generating with the processor output data acceptable for rendering at the selected output device.

14. In an information apparatus with access to at least identifiable output content, a data output method for rendering the output content at a selected output device, comprising:

delivering a document object and an output device object from the information apparatus to a server application operated on a server that is distinct from the information apparatus and the output device, the document object being related to the output content, and the output device object having one or more attributes corresponding to the selected output device;

receiving the output data at the information apparatus; and

delivering the output data from the information apparatus to the selected output device for rendering the output content.

15. The method of claim 14 further comprising obtaining an output device object and a document object at the information apparatus.

16. The method of claim 15 in which the obtaining the output device object relates to one or more of a user input, a communication with the selected output device, and a default.

17. The method of claim 14 in which the output data comprises one or more of a page description language, a markup language, a file format, an image format, a graphics format, an audio file, and a video file.

18. The method of claim 14 further comprising processing the output data before delivering the output data to the output device.

19. The method of claim 14 further comprising establishing a communication channel between the information apparatus and the output device and receiving one or more attributes characterizing the output device.

20. The method of claim 14 further comprising discovering the selected output device as one of one or more output devices that are discovered by the information apparatus as being available for rendering the output content.

21. The method of claim 20 further comprising selecting one of the one or more output devices that are discovered.

22. The method of claim 14 further comprising obtaining at the information apparatus a job object with one or more attributes characterizing the rendering of the output content.

23. The method of claim 14 in which the document object includes the output content.

24. The method of claim 14 in which the document object includes a pointer or reference to the output content.

25. The method of claim 14 in which the output device object includes an identification attribute that includes one or more of an output device brand indication, a model indication, an output device identification, type of output device indication, and a network address indication.

26. An information apparatus enabled to manage the generating of device dependent output data acceptable for rendering at a selected output device, the device dependent output data corresponding to output content identifiable at least partly by an information apparatus, the information apparatus comprising:

a communication unit to communicate with one or more output devices and an user interface for interacting with a user;

means for establishing a communication channel between the information apparatus and the selected output device;

means for receiving at the information apparatus over the communication channel one or more attributes corresponding to the selected output device; and

means for delivering at least part of a document object and at least part of an output device object to a device that is distinct from the information apparatus and the output device, the document object being associated with the output content, and the output device object having one or more attributes corresponding to the selected output device.

27. The apparatus of claim 26 further comprising means of selecting an output device compatible for receiving the output data for rendering the output content.

28. The apparatus of claim 26 further comprising means of discovering the selected output device as one of one or more output devices that are discovered by the information apparatus as being available for rendering the output content.

29. The apparatus of claim 26 in which the communication channel is wireless.

30. The apparatus of claim 26 further comprising means of delivering the output data to the selected output device for rendering of the output content.

31. The apparatus of claim 26 further comprising means of conforming at the information apparatus the output data into a form more acceptable for rendering at the selected output device.

32. The apparatus of claim 26 further comprising client application operating in the information apparatus for managing the rendering of output content.

33. The apparatus of claim 32 in which the client application further includes

means to communicate through an operating system with other applications residing in the same information apparatus.

34. The apparatus of claim 32 in which the client application further includes means to manage and utilize functionalities provided by hardware components residing in the information apparatus.

35. The apparatus of claim 32 in which the client application further includes means to implement a graphical user interface (GUI) in the information apparatus to interact with user.

36. The apparatus of claim 32 in which the client application further includes means for retrieving the output content from a storage component of the information apparatus.

37. The apparatus of claim 32 in which the client application further includes means for retrieving the output content from another application in the information apparatus.

38. The apparatus of claim 32 in which the client application further includes means for creating a document object from the output content or reference to output content.

39. The apparatus of claim 32 in which the client application further includes means for performing at least a partial raster image processing operation.

40. The apparatus of claim 32 in which the client application further includes means for creating an output device object from the one or more attributes relating to the output device.

41. The apparatus of claim 26 in which information used for the creating of the output device object was received from one or more of a user input, communication with output device or a default.

42. An information apparatus enabled to manage the rendering of an output content to one or more selected output device, the information apparatus including a communication unit to communicate with one or more output device, an user interface for interacting with a user, the information apparatus comprising:

means to establishing a communication channel between the information apparatus and the selected output device;

means for receiving output data from a device that is distinct from the information apparatus and the selected output device, the output data related to the output content and associated with an output device; and

means for delivering the output data to the selected output device for rendering of the output content via the established communication channel.

43. The apparatus of claim 42 further comprising means of selecting an output device compatible for receiving the output data for rendering the output content.

44. The apparatus of claim 42 further comprising means of discovering the selected output device as one of one or more output devices that are discovered by the information apparatus as being available for rendering the output content.

45. The apparatus of claim 42 further comprising means of conforming at the information apparatus the output data into a form more acceptable for rendering at the selected output device.

46. The apparatus of claim 42 further comprising client application operating in the information apparatus for managing the rendering of output content.

47. The apparatus of claim 46 in which the client application further includes means to communicate through an operating system with other applications residing in the same information apparatus.

48. The apparatus of claim 46 in which the client application further includes means to manage and utilize functionalities provided by hardware components residing in the information apparatus.

49. In a computer readable medium, a data structure for rendering at an output device output content managed with an information apparatus, comprising:

a document object related to the output content managed with the information apparatus; and

an output device object with one or more attributes corresponding to the selected output device.

50. The medium of claim 49 in further comprising a job object with one or more attributes characterizing the rendering of the output content.

51. The medium of claim 50 in which the job object includes an output

preferences attribute characterizing one or more output preferences including one or more of output quality, layout, number of output copies, number of windows per page, color or grayscale, and output size.

52. The medium of claim 50 in which the job object includes an identification attribute characterizing one or more identification features including one or more of a security setting, authentication, security information, payment information, subscription information, and user identification.

53. The medium of claim 50 in which the job object includes a job attribute characterizing one or more job features including one or more of a job priority or quality of service feature, job status information indicating status of the output job, a job instruction feature indicating one or more of job queuing, cancellation, execution, and output priority.

54. The medium of claim 50 in which the one or more job object attributes are obtained at least partly based on information received from the output device.

55. The medium of claim 50 in which the one or more job object attributes are obtained at least partly from a user input or a default.

56. The medium of claim 49 in which the document object includes the output content.

57. The medium of claim 49 in which the document object includes a pointer or reference to the output content.

58. The medium of claim 49 in which the output content is stored on a device other than the information apparatus.

59. The medium of claim 49 in which the document object includes one or more document instruction attributes that include instructions for one or more of viewing, obtaining, opening, interpreting, encoding, decoding, converting, compressing, decompressing, rasterizing, authenticating, encrypting, decrypting, or manipulating the output content.

60. The medium of claim 49 in which the document object includes one or more of software code and software application.

61. The medium of claim 49 in which the document object includes a reference or pointer to another object.

62. The medium of claim 49 in which the output device object includes an identification attribute that includes one or more of an output device brand indication, a model indication, an output device identification, type of output device indication, and a network address indication.

63. The medium of claim 49 in which the output device object includes an output device services attribute that includes one or more of a color or grayscale output indication, a laser or inkjet output indication, a duplex indication, an output quality indication, and a price per page indication.

64. The medium of claim 49 in which the output device object includes an output device output data attribute that indicates one or more of the one or more output data languages, the one or more output data formats, and the one or more output data instruction type supported by the output device.

65. The medium of claim 49 in which the output device object includes a payment information attribute that indicates payment information on one or more output services provided by the output device.

66. The medium of claim 49 in which the output device object includes a security attribute that indicates one or more security or authentication requirements supported by the output device.